

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference P48590PC00	FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. PCT/NL 00/ 00105	International filing date (day/month/year) 18/02/2000	(Earliest) Priority Date (day/month/year) 18/02/1999
Applicant MONTAN NEDERLAND B.V. et al.		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 3 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☐ **Unity of invention is lacking** (see Box II).

4. With regard to the **title**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No.

☒ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

1
☐ None of the figures.

INTERNATIONAL SEARCH REPORT

International Application No

PCT/NL 00/00105

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 G11B33/04

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 G11B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	US 5 081 446 A (PICCOLI ANTHONY F ET AL) 14 January 1992 (1992-01-14) column 6, line 50 - line 57	1, 4, 15 2, 3, 5-14, 16-32
X A	FR 2 605 747 A (CHECKPOINT SA ; BLEYS DOMINIQUE (FR)) 29 April 1988 (1988-04-29) page 5, line 31 - page 6, line 27; figures 1-7	1, 4, 15 2, 3, 5-14, 16-32
X	WO 96 21172 A (INSIGHT INC) 11 July 1996 (1996-07-11) page 11, line 13 - page 12, line 12; figures 1-5	1, 19, 31
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☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

16 May 2000

Date of mailing of the international search report

23/05/2000

Name and mailing address of the ISA

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Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
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Authorized officer

Ressenaar, J-P

INTERNATIONAL SEARCH REPORT

International Application No

PCT/NL 00/00105

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4 863 026 A (PERKOWSKI THOMAS J) 5 September 1989 (1989-09-05) column 7, line 55 -column 9, line 32; figure 11 -----	1,19,31
A	US 5 551 559 A (ROTH RICHARD ET AL) 3 September 1996 (1996-09-03) column 5, line 16 - line 23 -----	1,5
A	EP 0 762 357 A (LABEYRIE SA) 12 March 1997 (1997-03-12) column 3, line 51 -column 4, line 32; figure 2 -----	1

INTERNATIONAL SEARCH REPORT

information on patent family members

International Application No

PCT/NL 00/00105

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5081446 A	14-01-1992	AT 120297 T AU 648808 B AU 8054791 A CA 2091244 A DE 69108398 D DE 69108398 T EP 0550443 A FI 931271 A IE 62497 B JP 6502939 T MX 9101229 A NO 931000 A NZ 238411 A WO 9205526 A	15-04-1995 05-05-1994 15-04-1992 25-03-1992 27-04-1995 31-08-1995 14-07-1993 23-03-1993 08-02-1995 31-03-1994 04-05-1992 19-03-1993 25-06-1993 02-04-1992
FR 2605747 A	29-04-1988	AT 80958 T DE 3781889 D DE 3781889 T EP 0289551 A WO 8803302 A JP 1501104 T	15-10-1992 29-10-1992 08-04-1993 09-11-1988 05-05-1988 13-04-1989
WO 9621172 A	11-07-1996	US 5647151 A AU 4466796 A CA 2209074 A US 5782347 A US 5941382 A	15-07-1997 24-07-1996 11-07-1996 21-07-1998 24-08-1999
US 4863026 A	05-09-1989	NONE	
US 5551559 A	03-09-1996	US 5462159 A US 5377827 A US 5284242 A AT 161650 T AU 1729195 A CA 2141696 A DE 69501268 D DE 69501268 T EP 0666569 A ES 2110826 T JP 8048386 A WO 9521111 A DE 69326579 D DE 69326579 T EP 0576256 A JP 6156568 A	31-10-1995 03-01-1995 08-02-1994 15-01-1998 21-08-1995 08-08-1995 05-02-1998 16-04-1998 09-08-1995 16-02-1998 20-02-1996 10-08-1995 04-11-1999 13-01-2000 29-12-1993 03-06-1994
EP 0762357 A	12-03-1997	FR 2737798 A JP 9127876 A	14-02-1997 16-05-1997

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/NL00/00105

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, pages:

3-19	as originally filed			
1,2,2a	as received on	22/01/2001	with letter of	19/01/2001

Claims, No.:

1-38	as received on	22/01/2001	with letter of	19/01/2001
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Drawings, sheets:

1/7-7/7	as originally filed
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2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/NL00/00105

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-34
	No:	Claims	35-38
Inventive step (IS)	Yes:	Claims	1-34
	No:	Claims	35-38
Industrial applicability (IA)	Yes:	Claims	1-38
	No:	Claims	

2. Citations and explanations
see separate sheet

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:
see separate sheet

To V:

- 1). Reference is made to the following documents:

D1: FR-A-2 605 747

D2: WO-A-96/21172

- 2). D1 discloses a storage device for plate-shaped data carriers comprising the following features set out in claim 1 (page 5, line 31 to page 6, line 8 and figure 4):

- first and second covers parts 10, 11 pivotally connected and forming a box 9 (see figure 4);
- fixing means for the data carrier are implicitly disclosed (PCT Guidelines IV-7.2);
- protecting means C8 (see page 5, line 31 to page 6, line 8 and figure 4);
- the parts are injection molded integrally with the protection means (see page 3, lines 4-15).

D2 discloses a standard storage box for a CD where a label with information specific for the data carrier is held at the inner side of the box.

- 3). Claim 1 which is delimited against D1 as closest prior art further defines that the protection means incorporates product information specific for the data carrier.

The protection means of D1 is a resonance circuit working at a single frequency which therefore can not store information specific for the data carrier.

Further, D2 does not give the skilled person a hint of molding the label integrally with the cover parts of the box.

It therefore appears that the subject-matter of independent claim 1 and claims 2-18 dependent thereon is new and involves an inventive step.

- 4). What has been said above with reference to device claims 1-18 concerns method claims 19-34 mutatis mutandis.

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/NL00/00105

- 5). Claim 35 defines a standard CD casing with a sealing foil around which is known from a normal commercially available music CD.

The subject-matter of claim 35 is therefore not new.

For the sake of completeness it is noted that if the strip-shaped element was defined such that it differed from a standard sealing foil this element would not form unity with the subject-matter of claims 1-34.

- 6). The feature set out in dependent claims 36-37 are also not new over a standard music CD.
- 7). Claim 38 defines an apparatus for manufacturing a storage device. This must be construed as meaning merely an apparatus suitable for carrying out the process (see PCT Guidelines C-III-4.8). The molding apparatus for the devices of D1 can carry out such a process for which reason the subject-matter is not new.

To VIII:

- 8). In claim 1, the first two lines the plate-shaped data carriers are defined twice. It appears that one of them should have been deleted.
- 9). Claim 19 defines a method of manufacturing a storage device as defined in claim 1. In claim 1 it is defined that the protective means is integrally injection molded in the storage device whereas in claim 19 it is defined that the protection means is preferably injection molded i.e. optionally. This inconsistency should have been removed.

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:

Mr Ir A.W. Prins, c.s.
VEREENIGDE OCTROOIBUREAUX
Nieuwe Parklaan 97

PCT

WRF₂ 18-8-2001
NOTIFICATION OF TRANSMITTAL OF
THE INTERNATIONAL PRELIMINARY
EXAMINATION REPORT

(PCT Rule 71.1)

TERMIJN	NL-2587 BN The Hague PAYS-BAS
	04 MEI 2001
Beantwoord Voorl. def.	Bericht gezonden aan dd
MAP	Applicant's or agent's file reference P48590PC00

Date of mailing
(day/month/year)

27.04.2001

IMPORTANT NOTIFICATION

International application No.
PCT/NL00/00105

International filing date (day/month/year)
18/02/2000

Priority date (day/month/year)
18/02/1999

Applicant

MONTAN NEDERLAND B.V. et al.

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

4. REMINDER

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

Name and mailing address of the IPEA/



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D-80298 Munich
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Authorized officer

Schießl, W-P

Tel. +49 89 2399-2860



INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference P48590PC00	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/NL00/00105	International filing date (day/month/year) 18/02/2000	Priority date (day/month/year) 18/02/1999
International Patent Classification (IPC) or national classification and IPC G11B33/04		
Applicant MONTAN NEDERLAND B.V. et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.


2. This REPORT consists of a total of 5 sheets, including this cover sheet.

- ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 10 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☒ Certain observations on the international application

Date of submission of the demand 25/08/2000	Date of completion of this report 27.04.2001
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Poulsen, M Telephone No. +49 89 2399 2605 <div data-bbox="1383 1816 1539 1963" data-label="Image"> </div>

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/NL00/00105

I. Basis of the report

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1,2,2a as received on 22/01/2001 with letter of 19/01/2001

Claims, No.:

1-38 as received on 22/01/2001 with letter of 19/01/2001

Drawings, sheets:

1/7-7/7 as originally filed

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**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/NL00/00105

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-34
	No:	Claims	35-38
Inventive step (IS)	Yes:	Claims	1-34
	No:	Claims	35-38
Industrial applicability (IA)	Yes:	Claims	1-38
	No:	Claims	

2. Citations and explanations
see separate sheet

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:
see separate sheet

To V:

- 1). Reference is made to the following documents:

D1: FR-A-2 605 747

D2: WO-A-96/21172

- 2). D1 discloses a storage device for plate-shaped data carriers comprising the following features set out in claim 1 (page 5, line 31 to page 6, line 8 and figure 4):

- first and second covers parts 10, 11 pivotally connected and forming a box 9 (see figure 4);
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- protecting means C8 (see page 5, line 31 to page 6, line 8 and figure 4);
- the parts are injection molded integrally with the protection means (see page 3, lines 4-15).

D2 discloses a standard storage box for a CD where a label with information specific for the data carrier is held at the inner side of the box.

- 3). Claim 1 which is delimited against D1 as closest prior art further defines that the protection means incorporates product information specific for the data carrier.

The protection means of D1 is a resonance circuit working at a single frequency which therefore can not store information specific for the data carrier.

Further, D2 does not give the skilled person a hint of molding the label integrally with the cover parts of the box.

It therefore appears that the subject-matter of independent claim 1 and claims 2-18 dependent thereon is new and involves an inventive step.

- 4). What has been said above with reference to device claims 1-18 concerns method claims 19-34 mutatis mutandis.

- 5). Claim 35 defines a standard CD casing with a sealing foil around which is known from a normal commercially available music CD.

The subject-matter of claim 35 is therefore not new.

For the sake of completeness it is noted that if the strip-shaped element was defined such that it differed from a standard sealing foil this element would not form unity with the subject-matter of claims 1-34.

- 6). The feature set out in dependent claims 36-37 are also not new over a standard music CD.
- 7). Claim 38 defines an apparatus for manufacturing a storage device. This must be construed as meaning merely an apparatus suitable for carrying out the process (see PCT Guidelines C-III-4.8). The molding apparatus for the devices of D1 can carry out such a process for which reason the subject-matter is not new.

To VIII:

- 8). In claim 1, the first two lines the plate-shaped data carriers are defined twice. It appears that one of them should have been deleted.
- 9). Claim 19 defines a method of manufacturing a storage device as defined in claim 1. In claim 1 it is defined that the protective means is integrally injection molded in the storage device whereas in claim 19 it is defined that the protection means is preferably injection molded i.e. optionally. This inconsistency should have been removed.

22. 01. 2001

Title: Storage device having protective means.

(41)

The invention relates to a storage device for plate-shaped data carriers according to the preamble of claim 1. Such storage device is known from FR 2 605 747.

5 This known storage device is injection molded, an electrical circuit incorporated therein. This circuit consists of a capacitor and a coil for responding to specific frequencies emitted from an antenna of an anti theft equipment. In this known storage device said electrical circuit is identical for each and every storage device.

10 A further storage device for plate-shaped data carriers is known from international patent application WO 97/20315.

This known storage device is box-shaped, at least in closed condition, and comprises a first and a second cover part, pivotally interconnected for the opening and closing thereof. Provided within the storage device are fixing means for retaining the data carrier. This known storage device is presently substantially manufactured through injection molding. Such device is, for instance, intended for storing
20 CDs, diskettes, minidisks, creditcards or the like.

European patent application 0 420 350 teaches a storage device comprising a slightly box-shaped closing part with bottom and vertical walls, while the second closing part is cover-shaped and can be pressed against the first closing part for closing it. Adjacent a central area thereof, the first closing part comprises resilient fingers capable of engaging a central opening of a CD so as to retain said CD in a position approximately parallel to said bottom face. The first and second closing parts are detachably interconnected.
25 Such box is intended for storing CDs and is usually referred to as jewelbox.

These known storage devices have as a drawback that the data carriers can easily get loose therefrom, and more in particular that they can easily be removed therefrom, while,
35 moreover, the storage devices themselves can easily be

removed, imitated, damaged or otherwise manipulated fraudulently.

The object of the invention is to provide a storage device of the type described in the preamble, which is more suitably and more universally applicable for storing data carriers. In particular, the object of the invention is to provide storage devices which offer better protection against theft and/or imitation.

To that end, a storage device according to the present invention is characterized by the features of claim 1.

Injection molding storage devices of the present type offers the advantage that they can be manufactured in a simple and fast manner, and with great precision. The advantage achieved by including, during injection molding, protective means in or on the storage device, is that these protective means cannot be removed from the storage device, or at least not without clearly visible damage. This means that unacceptable manipulation of the storage device will be directly visible thereon, so that authenticity can be guaranteed. Moreover, the advantage achieved by injection molding the protective means integrally with the device is that they can be secured directly during the manufacture of the storage device, so that no further fastening means or operations are necessary.

In this context, "protective means" should at least be understood to mean anti-theft means and authentication means.

In a storage device according to the present invention a direct relationship is established between the storage device and a data carrier to be inserted therein. An unequivocal relationship between said storage device and the or each data carrier is established since specific product information is incorporated in said protective means.

It is preferred that a CD box of the present type be injection molded from polypropylene or a like plastic having a high shock-absorbing power, a suitable elastic modulus,

relatively high flexibility and dimensional stability. Such storage device is particularly suitable for protecting data carriers, in particular during dispatch thereof, for instance via the mail, courier services and the like. Indeed, such storage box will protect the data carrier in a particularly effective manner against impact loads and the like occurring during transport, while the data carrier cannot be removed from the storage device without any trouble.

In a first advantageous embodiment, a storage device according to the present invention is characterized by the features of claim 2.

The product-specific printing of at least a part of the storage device offers the advantage that it is easily and unequivocally recognizable whether the storage device belongs

(41)

New Claims

1. A storage device (1, 50, 70, 120) for plate-shaped data carriers and at least one plate-shaped data carrier (2), said storage device (1, 50, 70, 120) being box-shaped and comprising a first and a second cover part, pivotally
5 connected, wherein fixing means (13, 15, 16, 17, 31, 110) are provided for fixing said at least one data carrier (2) within the storage device (1, 50, 70, 120), the storage device (1, 50, 70, 120) being injection molded from plastic and being closable, and protective means (35, 123, 38, 38A, 36, 37)
10 being integrally injection molded in the storage device (1, 50, 70, 120) during manufacture, characterized in that said protective means (35, 123, 38, 38A, 36, 37) are designed such that specific product information is incorporated therein, specific for the at least one data carrier (2), so that an
15 unequivocal relationship between the storage device (1, 50, 70, 120) and said data carrier (2) is established.
2. A storage device (1, 50, 70, 120) according to claim 1, wherein the protective means (35, 123, 38, 38A, 36, 37) at least comprise a product-specific printing (35, 123) provided
20 during manufacture in the mold (101) and included in or on the storage device (1, 50, 70, 120).
3. A storage device (1, 50, 70, 120) according to claim 2, wherein the printing (35, 123) is provided at least on the outer side of the storage device (1, 50, 70, 120) and extends
25 over at least a cover, a back (4) and the intermediate pivot.
4. A storage device (1, 50, 70, 120) according to any one of claims 1-3, wherein the protective means (35, 123, 38, 38A, 36, 37) at least comprise magnetic or electronically readable means (38, 38A), which are preferably substantially
30 entirely surrounded by the material of the storage device (1, 50, 70, 120).
5. A storage device (1, 50, 70, 120) according to claim 4, wherein the protective means (35, 123, 38, 38A, 36, 37)

comprises a magnetic strip (38) which can cooperate with detection means therefor.

6. A storage device (1, 50, 70, 120) according to any one of the preceding claims, wherein the protective means (35, 123, 38, 38A, 36, 37) comprise sealing means, for which purpose at least one cover part is provided with a number of lip-shaped sealing elements, while when the storage device (1, 50, 70, 120) is closed, the or each sealing element is movable by at least a portion of its surface against the outer side of the other cover part and can be fixedly connected thereto, preferably through at least partial fusion, the arrangement being such that the data carrier (2) disposed in the storage device (1, 50, 70, 120) cannot be removed therefrom without breaking the sealing means.
7. A storage device (1, 50, 70, 120) according to any one of the preceding claims, wherein the protective means (35, 123, 38, 38A, 36, 37) comprise projections (25) provided on at least a cover part and corresponding openings (24) in the opposite cover part, such that when the storage device (1, 50, 70, 120) is closed, the projections (25) project through the openings (24) outside the outer side of the relevant cover part comprising the openings (24), the projecting projection parts that extend outside the cover part being deformable in such manner, for instance through heat, that the projections (25) cannot be withdrawn from the openings (24) without removal of at least a part of the projecting parts and/or damaging the projections (25) and/or cover parts (3, 5) otherwise.

8. A storage device (1, 50, 70, 120) according to claim 7, wherein the projections (25) are arranged on the first cover part and the openings (24) are arranged in the second cover part.

9. A storage device (1, 50, 70, 120) according to claim 7 or 8, wherein each cover part is provided with a raised longitudinal edge, said longitudinal edges, when the storage device (1, 50, 70, 120) is closed, abutting against each

other, the projections (25) and openings (24) being provided in or at least adjacent the area of the longitudinal edges.

10. A storage device (1, 50, 70, 120) according to any one of the preceding claims, wherein the protective means (35, 123, 38, 38A, 36, 37) comprise at least one strip-shaped or band-shaped element (40) which, after closing of the storage device (1, 50, 70, 120), is arranged so as to overlap at least a part of a seam between the first and the second cover part, and which is secured against the two cover parts (3, 5).

11. A storage device (1, 50, 70, 120) according to claim 10, wherein the or each strip-shaped or band-shaped element (40) is of tearable design and preferably comprises a weakening that defines a tearing line approximately at the level of said seam.

12. A storage device (1, 50, 70, 120) according to any one of the preceding claims, wherein the protective means (35, 123, 38, 38A, 36, 37) comprise at least one holographic or comparable image (37) which is integrally injection molded in or on, or at least with the storage device (1, 50, 70, 120).

13. A storage device (1, 50, 70, 120) according to any one of the preceding claims, wherein the protective means (35, 123, 38, 38A, 36, 37) comprise at least one bar-code (36).

14. A storage device (1, 50, 70, 120) according to any one of the preceding claims, wherein the protective means (35, 123, 38, 38A, 36, 37) comprise sealing means provided on or against the fixing means (13, 15, 16, 17, 31, 110), the arrangement being such that a data carrier (2) placed in the storage device (1, 50, 70, 120) cannot be removed therefrom without breaking the sealing means.

15. A storage device (1, 50, 70, 120) according to any one of the preceding claims, wherein on the side remote from a back (4) part and the pivots, the two cover parts (3, 5) are provided with cooperating closing means.

16. A storage device (1, 50, 70, 120) according to any one of the preceding claims, wherein the storage device (1, 50,

70, 120) is manufactured through injection molding from a plastic having a melt higher than 20, preferably higher than 30, in particular higher than 40 and even more in particular about 50.

5 17. A storage device (1, 50, 70, 120) according to any one of the preceding claims, wherein the storage device (1, 50, 70, 120) is injection molded in one piece, preferably at least substantially from clear polypropylene or a like plastic suitable for forming integrally injection molded
10 pivots.

18. A storage device (1, 50, 70, 120) according to any one of the preceding claims, wherein the storage device (1, 50, 70, 120) is manufactured from clear, transparent plastic and wherein a preferably at least partially transparent printing
15 (35, 123) is provided, said printing (35, 123) being at least partially visible from two opposite sides of a printed part of the device.

19. A method for manufacturing a storage device (1, 50, 70, 120) according to any one of the preceding claims, wherein
20 protective means (35, 123, 38, 38A, 36, 37) are placed in a mold (101) and wherein subsequently at least a portion of the storage device (1, 50, 70, 120) is formed against or around the protective means (35, 123, 38, 38A, 36, 37) in the mold (101), preferably through injection molding, such that the
25 protective means (35, 123, 38, 38A, 36, 37) cannot be removed from the relevant part without damage, characterized in that product information of a data carrier (2) to be stored in said storage device (1, 50, 70, 120) is being incorporated in
30 said protective means (35, 123, 38, 38A, 36, 37).

20. A method according to claim 19, wherein the storage device (1, 50, 70, 120) is injection molded in one piece.

21. A method according to claim 19 or 20, wherein a printing (35, 123) is provided in the mold (101), whereupon plastic in the mold (101) is provided against the printing (35, 123) or
35 a carrier carrying the printing (35, 123), such that the printing (35, 123) will form an integral part of the storage

device (1, 50, 70, 120) or a part thereof to be formed in the mold (101).

22. A method according to claim 21, wherein the printing (35, 123) is introduced into the mold (101) on a carrier.

5 23. A method according to claim 22, wherein the carrier is turned towards the adjacent wall of the mold (101) and the plastic is provided against the opposite side.

24. A method according to claim 22 or 23, wherein the carrier is slightly stretched before or during placement in the mold (101), such that it is pulled taut.

10 25. A method according to any one of claims 22-24, wherein such a carrier is applied that under the influence of at least the temperature of the plastic provided thereagainst, it burns or sublimes, while the printing (35, 123) is incorporated on or into the plastic.

26. A method according to claims 22-24, wherein the carrier fuses with the plastic.

27. A method according to any one of claims 22-26, wherein the carrier with printing (35, 123) is supplied as a strip, in particular from a roll, and is cut directly before or during placement.

28. A method according to any one of claims 21-27, wherein the printing (35, 123) is designed as transfer.

29. A method according to claim 21, wherein the printing (35, 123) is provided in the mold (101) through impressing or printing (35, 123) on a wall part of the mold (101) or a carrier provided thereon.

30. A method according to any one of claims 21-29, wherein a holographic printing (35, 123) is provided.

31. A method according to any one of claims 21-30, wherein a bar-code (36) or the like is provided.

32. A method according to any one of claims 21-31, wherein a carrier is provided in the mold (101), having a printing (35, 123) on two sides, the plastic being provided against the carrier and undetachably connected thereto.

33. A method according to claim 32, wherein the carrier is at least partially transparent.

34. A method according to any one of claims 19-33, wherein the protective means (35, 123, 38, 38A, 36, 37) comprise magnetic and/or electronic means which are positioned on a carrier in the mold (101), whereupon plastic is squirted around the magnetic and/or electronic means, such that the carrier is enclosed or incorporated therein or disappears therein, for instance through burning or sublimation.

35. A method for manufacturing a storage device (1, 50, 70, 120) for products, in particular for plate-shaped data carriers (2), said storage device (1, 50, 70, 120) comprising a first and a second cover part, said storage device (1, 50, 70, 120) being injection molded from plastic, in particular polypropylene or the like, whereupon one or more products are included in the storage device (1, 50, 70, 120) and the storage device (1, 50, 70, 120) is closed around the products by moving the first and the second cover part against each other, whereupon at least one strip-shaped or band-shaped element (40) is secured against the first and the second cover part, such that the cover parts (3, 5) are interconnected and products cannot be approached other than after breaking the protective means (35, 123, 38, 38A, 36, 37) formed by the at least one strip-shaped or band-shaped element (40), said at least one strip-shaped or band-shaped element (40) being connected to the cover parts (3, 5) through heat treatment.

36. A method according to claim 35, wherein the first cover part is pivotally connected to the second cover part by pivot means, at least one strip-shaped or band-shaped element (40) being provided at a distance from the pivot means.

37. A method according to any one of claims 35-36, wherein the or each strip-shaped or band-shaped element (40) is cut from a continuous strip of plastic directly prior to or during attachment against the storage device (1, 50, 70, 120).

38. An apparatus (100) for manufacturing a storage device
(1, 50, 70, 120) according to any one of claims 1-18 or for
using a method according to any one of claims 19-34, wherein
the apparatus (100) is arranged for injection molding, means
5 being provided for fitting protective means (35, 123, 38,
38A, 36, 37) in the mold (101), in particular a printing (35,
123).

REPLACED BY
ART 34 ABST

WO 00/49619

09/913906
PTO/REC'd 17 AUG 2000
PCT/NL00/00105

Title: Storage device having protective means.

The invention relates to a storage device for plate-shaped data carriers. Such storage device is known from international patent application WO 97/20315.

5 This known storage device is box-shaped, at least in closed condition, and comprises a first and a second cover part, pivotally interconnected for the opening and closing thereof. Provided within the storage device are fixing means for retaining the data carrier. This known storage device is presently substantially manufactured through injection
10 molding. Such device is, for instance, intended for storing CDs, diskettes, minidisks, creditcards or the like.

European patent application 0 420 350 teaches a storage device comprising a slightly box-shaped closing part with bottom and vertical walls, while the second closing part
15 is cover-shaped and can be pressed against the first closing part for closing it. Adjacent a central area thereof, the first closing part comprises resilient fingers capable of engaging a central opening of a CD so as to retain said CD in a position approximately parallel to said bottom face. The
20 first and second closing parts are detachably interconnected. Such box is intended for storing CDs and is usually referred to as jewelbox.

These known storage devices have as a drawback that the data carriers can easily get loose therefrom, and more in
25 particular that they can easily be removed therefrom, while, moreover, the storage devices themselves can easily be removed, imitated, damaged or otherwise manipulated fraudulently.

The object of the invention is to provide a storage
30 device of the type described in the preamble, which is more suitably and more universally applicable for storing data carriers. In particular, the object of the invention is to provide storage devices which offer better protection against theft and/or imitation.

To that end, a storage device according to the present invention is characterized by the features of claim 1.

Injection molding storage devices of the present type offers the advantage that they can be manufactured in a simple and fast manner, and with great precision. The advantage achieved by including, during injection molding, protective means in or on the storage device, is that these protective means cannot be removed from the storage device, or at least not without clearly visible damage. This means that unacceptable manipulation of the storage device will be directly visible thereon, so that authenticity can be guaranteed. Moreover, the advantage achieved by injection molding the protective means integrally with the device is that they can be secured directly during the manufacture of the storage device, so that no further fastening means or operations are necessary.

In this context, "protective means" should at least be understood to means anti-theft means and authentication means.

It is preferred that a CD box of the present type be injection molded from polypropylene or a like plastic having a high shock-absorbing power, a suitable elastic modulus, relatively high flexibility and dimensional stability. Such storage device is particularly suitable for protecting data carriers, in particular during dispatch thereof, for instance via the mail, courier services and the like. Indeed, such storage box will protect the data carrier in a particularly effective manner against impact loads and the like occurring during transport, while the data carrier cannot be removed from the storage device without any trouble.

In a first advantageous embodiment, a storage device according to the present invention is characterized by the features of claim 2.

The product-specific printing of at least a part of the storage device offers the advantage that it is easily and unequivocally recognizable whether the storage device belongs

Claims

1. A storage device for plate-shaped data carriers, said storage device being box-shaped and comprising a first and a second cover part, pivotally connected, wherein fixing means are provided for fixing the data carrier within the storage device, the storage device being injection molded from plastic, in particular polypropylene or the like, and being closable, and protective means being integrally injection molded in the storage device during manufacture.
2. A storage device according to claim 1, wherein the protective means at least comprise a product-specific printing provided during manufacture in the mold and included in or on the storage device.
3. A storage device according to claim 2, wherein the printing is provided at least on the outer side of the storage device and extends over at least a cover, a back and the intermediate pivot.
4. A storage device according to any one of claims 1-3, wherein the protective means at least comprise magnetic or electronically readable means, which are preferably substantially entirely surrounded by the material of the storage device.
5. A storage device according to claim 4, wherein the protective means comprises a magnetic strip which can cooperate with detection means therefor.
6. A storage device according to any one of the preceding claims, wherein the protective means comprise sealing means, for which purpose at least one cover part is provided with a number of lip-shaped sealing elements, while when the storage device is closed, the or each sealing element is movable by at least a portion of its surface against the outer side of the other cover part and can be fixedly connected thereto, preferably through at least partial fusion, the arrangement being such that the data carrier disposed in the storage

device cannot be removed therefrom without breaking the sealing means.

7. A storage device according to any one of the preceding claims, wherein the protective means comprise projections

5 provided on at least a cover part and corresponding openings in the opposite cover part, such that when the storage device is closed, the projections project through the openings outside the outer side of the relevant cover part comprising the openings, the projecting projection parts that extend
10 outside the cover part being deformable in such manner, for instance through heat, that the projections cannot be withdrawn from the openings without removal of at least a part of the projecting parts and/or damaging the projections and/or cover parts otherwise.

15 8. A storage device according to claim 7, wherein the projections are arranged on the first cover part and the openings are arranged in the second cover part.

9. A storage device according to claim 7 or 8, wherein each cover part is provided with a raised longitudinal edge, said
20 longitudinal edges, when the storage device is closed, abutting against each other, the projections and openings being provided in or at least adjacent the area of the longitudinal edges.

10. A storage device according to any one of the preceding
25 claims, wherein the protective means comprise at least one strip-shaped or band-shaped element which, after closing of the storage device, is arranged so as to overlap at least a part of a seam between the first and the second cover part, and which is secured against the two cover parts.

30 11. A storage device according to claim 10, wherein the or each strip-shaped or band-shaped element is of tearable design and preferably comprises a weakening that defines a tearing line approximately at the level of said seam.

12. A storage device according to any one of the preceding
35 claims, wherein the protective means comprise at least one

holographic or comparable image which is integrally injection molded in or on, or at least with the storage device.

13. A storage device according to any one of the preceding claims, wherein the protective means comprise at least one
5 bar-code.

14. A storage device according to any one of the preceding claims, wherein the protective means comprise sealing means provided on or against the fixing means, the arrangement being such that a data carrier placed in the storage device
10 cannot be removed therefrom without breaking the sealing means.

15. A storage device according to any one of the preceding claims, wherein on the side remote from a back part and the pivots, the two cover parts are provided with cooperating
15 closing means.

16. A storage device according to any one of the preceding claims, wherein the storage device is manufactured through injection molding from a plastic having a melt higher than 20, preferably higher than 30, in particular higher than 40
20 and even more in particular about 50.

17. A storage device according to any one of the preceding claims, wherein the storage device is injection molded in one piece, preferably at least substantially from clear polypropylene or a like plastic suitable for forming
25 integrally injection molded pivots.

18. A storage device according to any one of the preceding claims, wherein the storage device is manufactured from clear, transparent plastic and wherein a preferably at least partially transparent printing is provided, said printing
30 being at least partially visible from two opposite sides of a printed part of the device.

19. A method for manufacturing a storage device according to any one of the preceding claims, wherein protective means are placed in a mold and wherein subsequently at least a portion
35 of the storage device is formed against or around the protective means in the mold, preferably through injection

molding, such that the protective means cannot be removed from the relevant part without damage.

20. A method according to claim 19, wherein the storage device is injection molded in one piece.

5 21. A method according to claim 19 or 20, wherein a printing is provided in the mold, whereupon plastic in the mold is provided against the printing or a carrier carrying the printing, such that the printing will form an integral part of the storage device or a part thereof to be formed in the
10 mold.

22. A method according to claim 21, wherein the printing is introduced into the mold on a carrier.

23. A method according to claim 22, wherein the carrier is turned towards the adjacent wall of the mold and the plastic
15 is provided against the opposite side.

24. A method according to claim 22 or 23, wherein the carrier is slightly stretched before or during placement in the mold, such that it is pulled taut.

25. A method according to any one of claims 22-24, wherein
20 such a carrier is applied that under the influence of at least the temperature of the plastic provided thereagainst, it burns or sublimes, while the printing is incorporated on or into the plastic.

26. A method according to claims 22-24, wherein the carrier
25 fuses with the plastic.

27. A method according to any one of claims 22-26, wherein the carrier with printing is supplied as a strip, in particular from a roll, and is cut directly before or during placement.

30 28. A method according to any one of claims 21-27, wherein the printing is designed as transfer.

29. A method according to claim 21, wherein the printing is provided in the mold through impressing or printing on a wall part of the mold or a carrier provided thereon.

35 30. A method according to any one of claims 21-29, wherein a holographic printing is provided.

31. A method according to any one of claims 21-30, wherein a bar-code or the like is provided.

32. A method according to any one of claims 21-31, wherein a carrier is provided in the mold, having a printing on two sides, the plastic being provided against the carrier and undetachably connected thereto.

33. A method according to claim 32, wherein the carrier is at least partially transparent.

34. A method according to any one of claims 19-33, wherein the protective means comprise magnetic and/or electronic means which are positioned on a carrier in the mold, whereupon plastic is squirted around the magnetic and/or electronic means, such that the carrier is enclosed or incorporated therein or disappears therein, for instance through burning or sublimation.

35. A method for manufacturing a storage device for products, in particular for plate-shaped data carriers, said storage device comprising a first and a second cover part, said storage device being injection molded from plastic, in particular polypropylene or the like, whereupon one or more products are included in the storage device and the storage device is closed around the products by moving the first and the second cover part against each other, whereupon at least one strip-shaped or band-shaped element is secured against the first and the second cover part, such that the cover parts are interconnected and products cannot be approached other than after breaking the protective means formed by the at least one strip-shaped or band-shaped element.

36. A method according to claim 35, wherein the first cover part is pivotally connected to the second cover part by pivot means, at least one strip-shaped or band-shaped element being provided at a distance from the pivot means.

37. A method according to claim 35 or 36, wherein the or each strip-shaped or band-shaped element is connected to the cover parts through heat treatment.

38. A method according to any one of claims 35-37, wherein the or each strip-shaped or band-shaped element is cut from a continuous strip of plastic directly prior to or during attachment against the storage device.

- 5 39. An apparatus for manufacturing a storage device according to any one of claims 1-18 or for using a method according to any one of claims 19-34, wherein the apparatus is arranged for injection molding, means being provided for fitting protective means in the mold, in particular a
10 printing.

PATENT COOPERATION TREATY

JES

From the INTERNATIONAL BUREAU

PCT

NOTICE INFORMING THE APPLICANT OF THE
COMMUNICATION OF THE INTERNATIONAL
APPLICATION TO THE DESIGNATED OFFICES

To:

OTTEVANGERS, S., U.
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PAYS-BASNRF₂ 18-8-2001 Gum(PCT Rule 47.1(c), first sentence)
01 SEP. 2000Date of mailing (day/month/year)
Beantwoord bericht gezonden
vvoor. 24 August 2000 (24.08.00)
aan

Applicant's or agent's file reference

MAP P48590PC00

IMPORTANT NOTICE

International application No.

PCT/NL00/00105

International filing date (day/month/year)

18 February 2000 (18.02.00)

Priority date (day/month/year)

18 February 1999 (18.02.99)

Applicant

MONTAN NEDERLAND B.V. et al

1. Notice is hereby given that the International Bureau has communicated, as provided in Article 20, the international application to the following designated Offices on the date indicated above as the date of mailing of this Notice:

AU,KP,KR,US

In accordance with Rule 47.1(c), third sentence, those Offices will accept the present Notice as conclusive evidence that the communication of the international application has duly taken place on the date of mailing indicated above and no copy of the international application is required to be furnished by the applicant to the designated Office(s).

2. The following designated Offices have waived the requirement for such a communication at this time:

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The communication will be made to those Offices only upon their request. Furthermore, those Offices do not require the applicant to furnish a copy of the international application (Rule 49.1(a-bis)).

3. Enclosed with this Notice is a copy of the international application as published by the International Bureau on

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If the applicant wishes to postpone entry into the national phase until 30 months (or later in some Offices) from the priority date, a demand for international preliminary examination must be filed with the competent International Preliminary Examining Authority before the expiration of 19 months from the priority date.

It is the applicant's sole responsibility to monitor the 19-month time limit.

Note that only an applicant who is a national or resident of a PCT Contracting State which is bound by Chapter II has the right to file a demand for international preliminary examination.

REMINDER REGARDING ENTRY INTO THE NATIONAL PHASE (Article 22 or 39(1))

If the applicant wishes to proceed with the international application in the national phase, he must, within 20 months or 30 months, or later in some Offices, perform the acts referred to therein before each designated or elected Office.

For further important information on the time limits and acts to be performed for entering the national phase, see the Annex to Form PCT/IB/301 (Notification of Receipt of Record Copy) and Volume II of the PCT Applicant's Guide.

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(PCT Rule 61.2)

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To:

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Date of mailing (day/month/year) 16 October 2000 (16.10.00)	
International application No. PCT/NL00/00105	Applicant's or agent's file reference P48590PC00
International filing date (day/month/year) 18 February 2000 (18.02.00)	Priority date (day/month/year) 18 February 1999 (18.02.99)
Applicant HOOGLAND, Henk et al	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:

25 August 2000 (25.08.00)

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☐ was not

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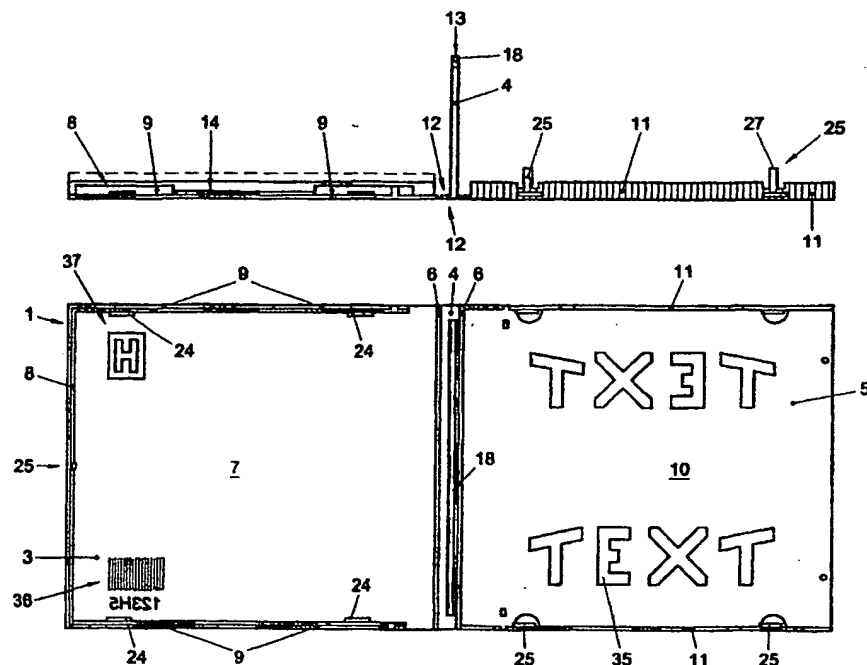
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(21) International Application Number: PCT/NL00/00105 (22) International Filing Date: 18 February 2000 (18.02.00) (30) Priority Data: 1011331 18 February 1999 (18.02.99) NL (71) Applicant (for all designated States except US): MONTAN NEDERLAND B.V. [NL/NL]; Oud Loosdrechtse dijk 135, NL-1231 LT Loosdrecht (NL). (72) Inventors; and (75) Inventors/Applicants (for US only): HOOGLAND, Henk [NL/NL]; Ganimedesstraat 40, NL-1562 ZM Krommenie (NL). HEILIGERS, Joannes, Hermanus [NL/NL]; Oud Loosdrechtse dijk 135, NL-1231 LT Loosdrecht (NL). (74) Agent: OTTEVANGERS, S., U.; Vereenigde, Nieuwe Parklaan 97, NL-2587 BN The Hague (NL).		(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). Published <i>With international search report.</i>

(54) Title: STORAGE DEVICE HAVING PROTECTIVE MEANS



(57) Abstract

A storage device for plate-shaped data carriers, said storage device being box-shaped and comprising a first and a second cover part, pivotally connected, wherein fixing means are provided for fixing the data carrier within the storage device, the storage device being injection molded from plastic, in particular polypropylene or the like, and being closable, and protective means being integrally injection molded in the storage device during manufacture.

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Title: Storage device having protective means.

The invention relates to a storage device for plate-shaped data carriers. Such storage device is known from international patent application WO 97/20315.

This known storage device is box-shaped, at least in
5 closed condition, and comprises a first and a second cover part, pivotally interconnected for the opening and closing thereof. Provided within the storage device are fixing means for retaining the data carrier. This known storage device is presently substantially manufactured through injection
10 molding. Such device is, for instance, intended for storing CDs, diskettes, minidisks, creditcards or the like.

European patent application 0 420 350 teaches a storage device comprising a slightly box-shaped closing part with bottom and vertical walls, while the second closing part
15 is cover-shaped and can be pressed against the first closing part for closing it. Adjacent a central area thereof, the first closing part comprises resilient fingers capable of engaging a central opening of a CD so as to retain said CD in a position approximately parallel to said bottom face. The
20 first and second closing parts are detachably interconnected. Such box is intended for storing CDs and is usually referred to as jewelbox.

These known storage devices have as a drawback that the data carriers can easily get loose therefrom, and more in
25 particular that they can easily be removed therefrom, while, moreover, the storage devices themselves can easily be removed, imitated, damaged or otherwise manipulated fraudulently.

The object of the invention is to provide a storage
30 device of the type described in the preamble, which is more suitably and more universally applicable for storing data carriers. In particular, the object of the invention is to provide storage devices which offer better protection against theft and/or imitation.

To that end, a storage device according to the present invention is characterized by the features of claim 1.

Injection molding storage devices of the present type offers the advantage that they can be manufactured in a simple and fast manner, and with great precision. The advantage achieved by including, during injection molding, protective means in or on the storage device, is that these protective means cannot be removed from the storage device, or at least not without clearly visible damage. This means that unacceptable manipulation of the storage device will be directly visible thereon, so that authenticity can be guaranteed. Moreover, the advantage achieved by injection molding the protective means integrally with the device is that they can be secured directly during the manufacture of the storage device, so that no further fastening means or operations are necessary.

In this context, "protective means" should at least be understood to mean anti-theft means and authentication means.

It is preferred that a CD box of the present type be injection molded from polypropylene or a like plastic having a high shock-absorbing power, a suitable elastic modulus, relatively high flexibility and dimensional stability. Such storage device is particularly suitable for protecting data carriers, in particular during dispatch thereof, for instance via the mail, courier services and the like. Indeed, such storage box will protect the data carrier in a particularly effective manner against impact loads and the like occurring during transport, while the data carrier cannot be removed from the storage device without any trouble.

In a first advantageous embodiment, a storage device according to the present invention is characterized by the features of claim 2.

The product-specific printing of at least a part of the storage device offers the advantage that it is easily and unequivocally recognizable whether the storage device belongs

to the data carrier included therein. Moreover, on such printing, it can be readily visible whether it concerns the authentic storage device for the data carrier in question. The advantage achieved by providing the printing during
5 manufacture of the storage device in the mold is that during manufacture, the printing forming part of the protective means is directly incorporated in or on the storage device, while the printing will adhere to the storage device in such a manner that it can no longer be removed therefrom without
10 damage.

In a further advantageous embodiment, a device according to the present invention is characterized by the features of claim 4.

The use of magnetic or electronically readable means
15 offers the advantage that the presence of or at least displacements of the storage device can readily be established by detection means suitable therefor. Thus, for instance unobserved removal of the storage devices from a shop or storehouse can be rendered considerably more
20 difficult or can even be prevented. The magnetic or electronic means can be designed such that specific product information can be incorporated therein, so that an unequivocal relationship between the storage device and an associated data carrier can be established. This also makes
25 it still easier to assess whether it concerns the authentic storage device. In this respect, it is preferred that the magnetic or electronic means be at least largely surrounded by the plastic from which the storage device is formed. Thus,
unintended and improper manipulation thereof is rendered
30 considerably more difficult.

In a further alternative embodiment, a storage device according to the present invention is further characterized by the features of claim 6.

The sealing means offer the advantage that a data
35 carrier can easily be inserted into the storage device and be retained therein, in such a manner that it can no longer be

removed therefrom without this being visible on the sealing means. After all, for doing so, the sealing means have to be broken. Because the sealing means are formed integrally with the storage device, in particular injection molded integrally therewith, the advantage achieved is that the sealing means cannot be broken and/or removed and, after manipulation, for instance the removal or copying thereof, cannot be placed back again or replaced by new sealing means.

In a further advantageous embodiment, a storage device according to the present invention is further characterized by the features of claim 10.

The use of a holographic or comparable image forming an integral part of the storage device offers the advantage that it is protected against imitation even more properly. Indeed, reproduction of a hologram or a like image is not easily possible, while the removal thereof is not possible without damage, so that the holograms cannot be reused on other storage devices, while storage devices from which such holographic images have been removed cannot be reused either, because of the damage occurred. Such a storage device would at least be directly recognizable.

In a further advantageous embodiment, a storage device according to present invention is further characterized by the features of claim 13.

A bar-code makes the storage device easy to recognize and individualize. By integrally injection molding such bar-code, in particular as an integrally formed printing, removal or alteration thereof is rendered considerably more difficult or even impossible.

In an alternative embodiment, a storage device according to the present invention is further characterized by the features of claim 14.

In such storage device, the data carrier cannot be detached from the storage device without the sealing means being broken, in disregard of the question whether the storage device can be opened prior to the breaking of the

sealing means. This offers, for instance, the possibility of viewing the data carrier in the storage device or observing further information included in the storage device without the sealing means having to be broken. Moreover, such sealing means can be used as additional protective means.

In a preferred embodiment, a storage device according to the present invention is further characterized by the features of claim 16.

Manufacturing a storage device from a plastic having a relatively high melt offers the advantage that relatively thin-walled product parts can be manufactured with a relatively long flow travel. As a result, a storage device according to the present invention can be manufactured from relatively little material. This offers advantages in terms of economy and production, for instance due to relatively short cycle periods and low material costs. Moreover, the advantage thus achieved is that during dispatch of the storage devices with data carriers included therein, only relatively low dispatch costs have to be made. By using a plastic having a melt higher than 20, preferably higher than 30, these advantages are already obtained. However, it is preferred that an even higher melt be used, for instance higher than 40 and more in particular higher than 50. A higher melt offers the additional advantage that particularly little friction will occur between the walls of the mold and an injection molding mass moving therealong, in particular the flow skin thereof. This is advantageous in particular when, in a storage device according to the present invention, a printing is provided in the mold for inclusion in or on at least a part of the storage device, as described hereinabove, because damage to said printing is simply prevented thereby. This is partly because of the fact that for this, relatively low injection molding pressures may suffice.

In a particularly advantageous embodiment, a storage device according to the present invention is further characterized by the features of claim 17.

Injection molding the storage device in one piece from polypropylene or a like plastic offers the advantage that the cover part cannot be separated from the bottom part or from the fixing means without any damage, so that improper
5 manipulation of a data carrier included therein can be prevented even more simply, while it is moreover protected against damage in an even better manner. In addition, such storage device offers the advantage that it can be manufactured integrally in a fast and simple manner.

10 In a further advantageous embodiment, a storage device according to the invention is characterized by the features of claim 18.

Designing the storage device in clear, transparent plastic offers the advantage that a printing can be provided
15 therein or thereon which is visible at least on a part of the storage device from two sides thereof, for instance on the outer and inner sides of a cover part or bottom part. This readily prevents the necessity of providing such printing on two sides. Moreover, such storage device has a particularly
20 pleasant outward appearance. By giving the printing an at least partially transparent design, the attractiveness of this outward appearance can even be further increased, while, moreover, the data carrier can be rendered at least partially visible from the outer side of the storage device, if so
25 desired. Further, such at least partially transparent printing requires a high precision, so that the copying thereof is complicated still further.

The invention further relates to a method for manufacturing a storage device according to the present
30 invention, characterized by the features of claim 19.

In a first particularly advantageous embodiment, a method according to the present invention is characterized by the features of claim 24.

The provision of a printing in the mold prior to the
35 introduction of a plastic injection molding mass offers the advantage that integral incorporation of the printing in or

on the relevant product part to be formed can readily be provided. By providing the printing on a carrier, such that the printing with the carrier can be placed in the mold, placement becomes possible in a simple manner. By slightly
5 expanding the carrier prior to and/or during its placement in the mold, such that the carrier is under some tension, preferably on all sides, it is easily provided that any wrinkles or the like in the carrier and, accordingly, in the printing, are removed and/or the formation thereof during
10 placement is prevented. Thus, in a particularly simple and reliable manner, the printing with the carrier can be introduced into the mold so as to be completely smooth. It is preferred that the carrier adheres to the wall of the mold, for instance through a static load, through reduced pressure
15 between carrier and mold part, through sticking or in another suitable manner. The plastic can then be provided against the printing and/or the carrier, such that the printing starts to form an integral part of the relevant product part, preferably the storage device formed in one piece. Partly due
20 to the tension used, the carrier may be particularly thin and, for instance, supplied from a roll.

For this, a carrier can be used which disappears at least largely, due to the introduction of the plastic mass, or is incorporated therein entirely or partially.
25 Alternatively, a carrier can be used which fuses with said plastic.

In an alternative, particularly advantageous embodiment, a method according to the present invention is characterized by the features of claim 29.

30 By providing a printing in the mold, directly on the wall thereof, for instance utilizing an impressing technique, a printing technique or the like, the advantage achieved is that no carrier is required, at least that the carrier need not be printed prior to its positioning in a mold.

35 Preferably, the carrier is left out entirely. In particular with such a method, the printing can be adjusted for each

storage device, if so desired. For instance, a printing apparatus can be used which is controlled by means of, for instance, a computer, so that for a series of storage devices, the printing can in each case be adjusted, completely or partially. In this manner, each successive printing may carry a different, unique recognition code, for further authentication. It is even possible to supply desired printings to the apparatus remotely, for instance via a telephone or computer network.

10 In a further advantageous embodiment, a method according to the present invention is characterized by the features of claim 34.

The positioning of protective means such as magnetic and/or electronic means on one or more carriers in the mold prior to the introduction of the plastic mass therein, offers the advantage that these protective means can be incorporated and fixed in the storage device in a particularly simple manner.

20 The invention further relates to an apparatus for manufacturing a storage device according to the invention or for using a method according to the present invention.

Further embodiments of a storage device or method according to the present invention are given in the subclaims and the specification.

25 To clarify the invention, exemplary embodiments of a storage device and a method, and of an apparatus for the manufacture or use thereof according to the invention, will hereinafter be further described, with reference to the accompanying drawings. In these drawings:

30 Fig. 1 is a top plan view and side elevation of a storage device in open condition;

Fig. 2 is a sectional side elevation of a storage device according to Fig. 1, suitable for substantially circular data carriers such as CDs;

35 Fig. 2a is an enlarged sectional view of a storage device taken on the line A-A in Fig. 2;

Fig. 3 is a partially sectional side elevation of a storage device according to Fig. 1, suitable for substantially rectangular data carriers, such as diskettes and minidisks;

5 Fig. 4 is a sectional side elevation of a storage device according to Fig. 1 in a further alternative embodiment;

Fig. 5 is a perspective view of a storage device in a further alternative embodiment;

10 Fig. 6 schematically shows an apparatus for manufacturing a storage device according to the invention;

Fig. 6a shows an alternative embodiment of a device according to the invention;

15 Fig. 7 is a partially sectional side elevation of sealing means according to the invention;

Fig. 8 is a front view of a storage device according to the invention, with alternative protective means;

Fig. 9 shows an alternative embodiment of a storage device;

20 Fig. 10 schematically shows an apparatus for fitting protective means as shown in Fig. 8; and

Fig. 11 shows a strip for protective means as shown in Figs. 8-10.

In this specification, identical or corresponding
25 parts have identical or corresponding reference numerals. The general construction of storage devices according to Figs. 1-4 are discussed at length in international patent application WO 97/20315, the general construction of storage devices according to Fig. 5 are discussed at length in EP
30 0 420 350, which publications are understood to be incorporated herein by reference.

Fig. 1 shows a storage device 1 for a data carrier 2. A data carrier 2 to be stored may, for instance, be circular, such as compact discs (CD-i, CD-ROM; Fig. 3), or
35 substantially rectangular, such as chipcards, diskettes, minidisks and the like (Fig. 5). The storage device 1

according to Figs. 1-4 is of one-part construction and, for instance, manufactured through injection molding from a relatively environmentally friendly, recyclable plastic such as polypropylene. Polypropylene and like plastics have a relatively high resistance to shocks and tearing, a relatively favorable elastic modulus and can suitably be injection molded. Moreover, properly printable, impact-resistant and scratch-resistant plastics are preferably used. However, other plastics may also be used, if so desired. As will be further explained hereinbelow, in particular clear, transparent plastics, such as clear polypropylene, can be used in an advantageous manner.

A storage device 1 as shown in Figs. 1-4 comprises a first closing part 3, an intermediate part 4 and a second closing part 5, interconnected via two integrated pivots 6 adjacent the bottom side, such that the closing parts 3, 5 can be swiveled from the open position shown in full lines into a closed position shown in broken lines (Fig. 1).

The first closing part 3 has a top face, a front edge 8 and two first sidewalls 9 adjoining thereto. The second closing part 5 likewise has a top face 10, two raised second sidewalls 11 and a front edge 8A. In the closed condition, the second sidewalls 11 abut against the first sidewalls 9, while the front edge 8 abuts against the front edge 8A of the second closing part 5. The bottom side 12 of the intermediate part 4 constitutes the fourth wall of the storage device 1 in closed condition, so that it is closed off in an entirely waterproof and dustproof manner. The receiving means 13 for the data carrier 2, which receiving means will be specified hereinbelow, are accommodated in the intermediate part 4 and, when the storage device 1 is in its closed condition, are accommodated in the inner space 14 thereof, possibly together with a data carrier 2 included therein.

The intermediate part 4 comprises two spaced apart wall parts 15, interconnected by transverse partitions 16, shown in enlarged view in Fig. 2A. On the side remote from

the pivots 6, the walls 15 are provided with toothed clamping projections 17, while in each case two clamping projections 17 are positioned opposite each other. Enclosed between the clamping projections 17 is a groove 18 whose width B is slightly smaller than the thickness D of the data carrier 2 that is to be stored in the storage device.

In the embodiment shown in Fig. 2, the groove 18 extends along a segment of a circle having a radius R which approximately corresponds to the radius of a circular data carrier, such as a CD, to be included therein. The circular segment encloses an angle α of less than 180° . Preferably, the enclosed angle α is about 120° .

In the embodiment of a storage device 50 according to the invention shown in Fig. 3, the groove 18 extends along three sides of an imaginary rectangle CK, shown in the drawing in broken lines. On the side proximal to the pivots 6, three pairs of clamping projections 17 are disposed along the groove 18, while along the two groove parts 18' that extend at right angles thereto, one pair of clamping projections is in each case provided. In this embodiment, the storage device 50 is in particular suitable for storing data carriers having a substantially rectangular shape, such as chipcards, creditcards, magnetic cards, diskettes, cassettes, minidisks and the like.

As appears from in particular Fig. 1, in the embodiment shown, a storage device according to the present invention is manufactured from clear, transparent plastic, on which a printing 35 is provided, in the embodiment shown symbolically represented by the word "text", visible through the closing parts 3, 5. There are further provided a bar-code and a holographic image 37, in the embodiment shown represented by an H. Such holographic images are generally known and are, for instance, supplied by the printer Johan Enschede, the Netherlands. The bar-code 36 and the holographic image 37 are provided, along with the printing 35, in or at least on the storage device.

For at least a portion of the printing 35, an ink luminescing under ultraviolet or infrared ink, such as a hologram structure, is preferably used, as known from patent application WO 99/45513, incorporated herein by reference.

5 In a storage device according to the present invention, in the embodiment shown in Figs. 1 and 2, a magnetic strip 38 is integrally injection molded in the intermediate part 4, which strip is designed for cooperation with detection means installed in, for instance, a shop. Such
10 magnetic strips are known per se in various embodiments. A choice therefrom is directly clear to a skilled person. Preferably, magnetic strips 38 are used which can contain remotely readable information for authenticating the storage device. By such magnetic strip, theft of the storage device
15 with data carrier included therein can be rendered substantially more difficult or even be prevented, while, moreover, the tracing and following of the storage device during production processes can thereby be simplified.

Similarly, in the embodiment shown in Fig. 3, coils
20 38A are incorporated for the same or comparable purposes. Other types of transponders may also be applied.

Provided on the longitudinal walls 11 of the second closing part 5 are fingers 25, extending approximately parallel to the plane of the longitudinal walls 11, slightly
25 displaced inwards relative to the outer side thereof. The fingers 25 extend above the top edge 26 of said longitudinal wall 11 over a height which is slightly greater than the height of the longitudinal walls 9 of the first closing part 3. At corresponding positions, openings 24 have been provided
30 in the bottom face 7 of the first closing part 3, through which openings 24 the fingers 25 can extend, such that when the storage device 1 is closed, the top ends 27 extend beyond the bottom face 7. The fingers and openings are shown more specifically in Fig. 7.

35 Fig. 4 shows an alternative embodiment of a storage device 70, with data carrier 2 included therein. In this

relatively simple and compact embodiment, the clamping projections 17 are positioned directly on the intermediate part 4 in three pairs, so that the longitudinal edge of the data carrier 2 lies approximately against the center part 4. Hence, the groove 18 lies close against the center part and has two interrupted walls. At their free ends 30, the projections 17 slightly divert outwards, to form an insert opening for the data carrier 2 towards the clamping parts 31 of the projections 17, which insert opening converges in the direction of the center part.

In a usual manner, the closing parts 3, 5 are provided with means for including text booklets, librettos and like added information means.

Fig. 5 shows a jewel box of the known type, described in EP 0 420 350. However, in this embodiment, an integrated printing 37 is provided according to the invention. The resilient fingers 110 are moreover interconnected by sealing lips which are melted together after insertion of the CD. As a result, the CD cannot be removed before the sealing means are broken. Further, a magnetic strip 38 is integrally injection molded in the back 111 of the box, so that the jewel box is always traceable and, moreover, theft thereof is rendered considerably more difficult. Closing lips 25 and associated openings 24 may be provided, if so desired (not shown).

Fig. 6 schematically shows an apparatus 100 for manufacturing a storage device according to the invention, in particular according to Figs. 1-4. In this Figure, the parts of the mold 101 are designated by the reference numerals of the parts of the storage device. This apparatus 100 comprises supply means 102 for a carrier 103 with printing 35-37, tension and transfer means 104 for the carrier 103 and an injection molding apparatus 105 with mold 101. On the carrier 103, manufactured from plastic, for instance film-shaped plastic having a thickness of less than 80 micrometer, for instance 20-30 micrometer, a printing 35 is provided with

transfer ink. Preferably, this printing 35 is partially transparent, for instance built up from slightly spaced apart pixels. Preferably, the carrier 103 is transparent, so that the printing is visible from two sides of the carrier 103. If
5 so desired, there are also provided on the carrier a bar-code 36 and a holographic image 37. The bar-code 36 may, for instance, be printed or impressed, the holographic image is, for instance, impressed or glued onto the carrier 103. The carrier 103 is rolled up in the supply means 102 and can be
10 supplied, via the roll, to a frame 106 of the tension and transfer means 104. The carrier 103 is clamped on the frame 106, such that folds and the like are pulled smooth. By punch means 107, the carrier is cut to measure, for instance to the size of the first 3 and second closing part 5 and the
15 intermediate part 4. The carrier 103 is fixed on the frame 106 through, for instance, clamping, reduced pressure, adhesion or static load. Next, by means of the tension and transfer device, the carrier 103 is transferred into the mold 101, with the carrier 103 being fixed against the wall of the
20 mold 101, opposite the cavity for forming the fixing means. By static load, adhesion, suction or the like, the carrier 103 is secured, whereupon the frame 106 is pulled away. By support means 39, a magnetic strip 38 or an electric coil 38A or like authenticating and/or protective means is placed in
25 the mold. Next, the mold 101 is closed and a plastic mass is introduced into the injection molding apparatus 105 by means of an injector known per se and schematically shown as pump 108. Preferably, this mass has a high melt, for instance higher than 30 and preferably higher than 50. The mass flows
30 through the mold cavity along the carrier 103. This involves sublimation of the carrier 103, while the printing 35, 36, 37 is incorporated onto and into the plastic skin of the flowing mass. In so far as the carrier 103 does not sublime or burn, it will be incorporated into the mass. Thus, in one shot, a
35 storage device is obtained having a two-sided printing 35,

magnetic strip or coil 38, 38A or the like, bar-code 36 and hologram 37.

Since use is made of a particularly high melt (higher than 20), long flow paths can be used at small wall thicknesses, for instance to less than 1 mm. The high melt offers the surprising advantage that the solidifying plastic, mass, rolling down along the mold wall and hence the printing, which mass forms a thin skin, does not damage the printing (text, image, bar-code and the like), while undesired stresses in the material are moreover prevented. Thus, deformations of the storage devices are prevented. Thin walls offer the advantage that short cycle times are possible, little material is needed and the storage devices have little weight. As a result, dispatch is possible in a simple and advantageous manner.

In the embodiment shown in Fig. 6A, a printer head 120 is moveable in the mold 101 for providing a printing therein, preferably in transfer ink. Such ink is known per se and is properly incorporated into the plastic without running in an undesired manner. The printer head 120 is controlled by a computer 121, whereby the printing can be determined for any storage device to be injection molded. Thus, in principle, the printing can be adjusted for each individual storage device, for instance by changing a serial number of by an entirely different printing. Thus, an even better authentication is obtained. The computer may, for instance, be connected to a computer network for supplying desired printings online.

A storage device according to the invention can be used as follows.

In an injection molding machine as shown in Fig. 6, a storage device 1, 50, 70 is manufactured in one production operation and subsequently fed to a packaging line, with the closing parts 3, 5 lying flat on a conveying means, such as a conveyor belt. The intermediate part 4 extends approximately vertically, at least approximately at right angles to the

plane of the conveying means and is open at the top (Fig. 1). A data carrier 2 is simply inserted into receiving means 13 by pressing a longitudinal edge 19 thereof between the clamping projections 17 and pushing it further in the direction of the bottom 20 of the groove 18. This causes the clamping projections 17 to be slightly pressed apart, while a clamping force is created, due to the deformation forces. Accordingly, the clamping projections 17 are pressed against the flat outer surfaces 21 of the data carrier. The groove has such a depth that information-carrying parts K are not reached by the clamping projections 17. Next, booklet and the like, if any, can be placed in the receiving means intended therefor.

After the data carrier 2 has been inserted between the clamping projections 17, the closing parts 3, 5 are swiveled in the direction of the intermediate part 4 and the data carrier 2, such that the or each closure is closed. This involves the fingers 25 slipping into the openings 24, such that their top ends 27 project therefrom. Next, these top ends are heated such that they melt slightly and widen across the edges of the opening 24. The starting position is shown in Fig. 7 on the left-hand side of the center line, the end situation is shown on the right-hand side. As Fig. 7 clearly demonstrates, the deformed ends 27 of the fingers 25 will have to be removed, for instance cut away, before the storage device can be opened. Thus, a proper authenticating seal is obtained.

In an alternative embodiment not shown, the fingers 25 are provided against an outer side of the wall parts of the opposite closing part. The fingers 25 have then at least partially fused with said wall parts through heating, such that the parts have to be cut loose from one another before the storage device can be opened. The materials used allow cutting in a simple manner, without directly involving breakage. Preferably, the fingers are received in slots, such

that the sides of the storage device remain substantially flat.

Fig. 8 is a front view of a storage device 1 according to the invention, comprising a further alternative embodiment of protective means. In the embodiment shown, the storage device 1, which may have any embodiment shown in this specification, but which may, for instance, also be a storage device for other types of products, such as a bottle with screw cap, as shown schematically in Fig. 9, a package for loose bulk material such as pins and the like or medicine packages, comprises a first closing part 3 and a second closing part 5, again interconnected by a pivot 6, although loose closing parts can be used as well. In this specification, closing parts are also referred to as cover parts.

In the embodiment shown in Fig. 8, a strip-shaped element 40 of slight dimensions compared with the dimensions of the further storage device 1, is attached to the outer side of the storage device. A first end of the strip-shaped element 40 is secured against the first closing part 3, the opposite end is secured against the second closing part 5. Hence, the element 40 overlaps the seam 41 formed between the two closing parts and the two closing parts 3, 5 cannot be swiveled relative to each other. In the embodiment shown, the element 40 is provided on the side of the storage device remote from the pivot 6, for maximum protection. Of course, two or more of such elements 40 can be provided, also against sides other than the one mentioned. The or each band-shaped element 40 has a small thickness, for instance some tenths of millimeters or even less, for instance film-shaped. Preferably, the element 40 can readily be cut through or, optionally, torn, without damaging the storage device or the contents thereof. For that purpose, in an alternative embodiment, a weakening line may for instance be provided at the level of said seam 41.

Fig. 10 schematically shows an apparatus 60 whereby band-shaped elements 40 as shown in Fig. 8 can be secured on a storage device in a simple and fast manner. This apparatus 60 comprises a first roll 61 on which a strip 62 of plastic material, preferably of an ultrasonic weldable type, is wound. This strip 62 has a width that is slightly greater than the desired width of the band-shaped element 40, as appears from Fig. 11. The strip 62 is unwound from said first roll 61 and guided along a side of a storage device 1 against which the band-shaped element 40 is to be secured. At the level of said side of the storage device, a cutting tool 63 is moved against the strip 61 approximately at right angles to the feed-through direction S, to cut from the strip 62 a strip having the size of the desired band-shaped element 40, with a part 64 of the strip remaining on either side thereof. The cut or punched band-shaped element 40 is subsequently pressed against the storage device and secured against it in the desired position, preferably by ultrasonic welding or a like heat-joining technique. The band-shaped element 40 may also be glued against one or both parts 3, 5. The storage devices can automatically be supplied and discharged, for instance in a direction at right angles to the plane of the drawing. After the band-shaped element 40 has been cut from the strip 62, the strip 62 can be wound on a second roll 65. As the strip remains windable, the operation can be performed at a particularly great speed. Some tens to hundreds of band-shaped elements per minute.

Fig. 9 shows a medicine bottle 120 with screw cap 12, with a band-shaped element 40 being partially secured on the screw cap 121 and partially on the medicine bottle 120. Provided on the band-shaped element is a code 123, preferably by means of the cutting tool. This code may, for instance, comprise a date of manufacture, an indication of the type of medicine or the like.

It will be understood that when several band-shaped elements 40 are to be provided against a storage device, an

apparatus 60 can have a corresponding number of first and second rolls and cutting tools. Of course, the band-shaped elements 40 may also be provided in another direction, for instance with a feed-through direction S parallel to the seam 5 41. A relatively long band-shaped element 40 may, for instance, extend over substantially the full length of the relevant side of the storage device 1. Also, loose band-shaped elements 40 may be supplied and secured against a storage device.

10 The invention is by no means limited to the embodiments represented in the drawings and specification. Many variations thereof are possible. For instance, a storage device according to the invention may be designed differently, for instance having several fixing means next to 15 or behind one another, while the storage devices may moreover be manufactured from other materials. Also, other printing techniques may be applied. The printing may of course also be provided on the inner side or on both sides. For that matter, it will be clear that the printing techniques described may 20 also be applied to other types of products. The data carriers may be inserted into the storage device at another moment, for instance in a shop, whereupon they can be sealed by means of said fingers and openings. These and many comparable variations are understood to fall within the framework of the 25 invention outlined by the appended claims.

Claims

1. A storage device for plate-shaped data carriers, said storage device being box-shaped and comprising a first and a second cover part, pivotally connected, wherein fixing means are provided for fixing the data carrier within the storage
5 device, the storage device being injection molded from plastic, in particular polypropylene or the like, and being closable, and protective means being integrally injection molded in the storage device during manufacture.
2. A storage device according to claim 1, wherein the
10 protective means at least comprise a product-specific printing provided during manufacture in the mold and included in or on the storage device.
3. A storage device according to claim 2, wherein the printing is provided at least on the outer side of the
15 storage device and extends over at least a cover, a back and the intermediate pivot.
4. A storage device according to any one of claims 1-3, wherein the protective means at least comprise magnetic or electronically readable means, which are preferably
20 substantially entirely surrounded by the material of the storage device.
5. A storage device according to claim 4, wherein the protective means comprises a magnetic strip which can cooperate with detection means therefor.
- 25 6. A storage device according to any one of the preceding claims, wherein the protective means comprise sealing means, for which purpose at least one cover part is provided with a number of lip-shaped sealing elements, while when the storage device is closed, the or each sealing element is movable by
30 at least a portion of its surface against the outer side of the other cover part and can be fixedly connected thereto, preferably through at least partial fusion, the arrangement being such that the data carrier disposed in the storage

device cannot be removed therefrom without breaking the sealing means.

7. A storage device according to any one of the preceding claims, wherein the protective means comprise projections
5 provided on at least a cover part and corresponding openings in the opposite cover part, such that when the storage device is closed, the projections project through the openings outside the outer side of the relevant cover part comprising
10 the openings, the projecting projection parts that extend outside the cover part being deformable in such manner, for instance through heat, that the projections cannot be withdrawn from the openings without removal of at least a part of the projecting parts and/or damaging the projections and/or cover parts otherwise.
- 15 8. A storage device according to claim 7, wherein the projections are arranged on the first cover part and the openings are arranged in the second cover part.
9. A storage device according to claim 7 or 8, wherein each cover part is provided with a raised longitudinal edge, said
20 longitudinal edges, when the storage device is closed, abutting against each other, the projections and openings being provided in or at least adjacent the area of the longitudinal edges.
10. A storage device according to any one of the preceding
25 claims, wherein the protective means comprise at least one strip-shaped or band-shaped element which, after closing of the storage device, is arranged so as to overlap at least a part of a seam between the first and the second cover part, and which is secured against the two cover parts.
- 30 11. A storage device according to claim 10, wherein the or each strip-shaped or band-shaped element is of tearable design and preferably comprises a weakening that defines a tearing line approximately at the level of said seam.
12. A storage device according to any one of the preceding
35 claims, wherein the protective means comprise at least one

holographic or comparable image which is integrally injection molded in or on, or at least with the storage device.

13. A storage device according to any one of the preceding claims, wherein the protective means comprise at least one
5 bar-code.

14. A storage device according to any one of the preceding claims, wherein the protective means comprise sealing means provided on or against the fixing means, the arrangement
10 being such that a data carrier placed in the storage device cannot be removed therefrom without breaking the sealing means.

15. A storage device according to any one of the preceding claims, wherein on the side remote from a back part and the pivots, the two cover parts are provided with cooperating
15 closing means.

16. A storage device according to any one of the preceding claims, wherein the storage device is manufactured through injection molding from a plastic having a melt higher than
20 20, preferably higher than 30, in particular higher than 40 and even more in particular about 50.

17. A storage device according to any one of the preceding claims, wherein the storage device is injection molded in one piece, preferably at least substantially from clear
25 polypropylene or a like plastic suitable for forming integrally injection molded pivots.

18. A storage device according to any one of the preceding claims, wherein the storage device is manufactured from clear, transparent plastic and wherein a preferably at least partially transparent printing is provided, said printing
30 being at least partially visible from two opposite sides of a printed part of the device.

19. A method for manufacturing a storage device according to any one of the preceding claims, wherein protective means are placed in a mold and wherein subsequently at least a portion
35 of the storage device is formed against or around the protective means in the mold, preferably through injection

molding, such that the protective means cannot be removed from the relevant part without damage.

20. A method according to claim 19, wherein the storage device is injection molded in one piece.

5 21. A method according to claim 19 or 20, wherein a printing is provided in the mold, whereupon plastic in the mold is provided against the printing or a carrier carrying the printing, such that the printing will form an integral part of the storage device or a part thereof to be formed in the
10 mold.

22. A method according to claim 21, wherein the printing is introduced into the mold on a carrier.

23. A method according to claim 22, wherein the carrier is turned towards the adjacent wall of the mold and the plastic
15 is provided against the opposite side.

24. A method according to claim 22 or 23, wherein the carrier is slightly stretched before or during placement in the mold, such that it is pulled taut.

25. A method according to any one of claims 22-24, wherein
20 such a carrier is applied that under the influence of at least the temperature of the plastic provided thereagainst, it burns or sublimes, while the printing is incorporated on or into the plastic.

26. A method according to claims 22-24, wherein the carrier
25 fuses with the plastic.

27. A method according to any one of claims 22-26, wherein the carrier with printing is supplied as a strip, in particular from a roll, and is cut directly before or during placement.

30 28. A method according to any one of claims 21-27, wherein the printing is designed as transfer.

29. A method according to claim 21, wherein the printing is provided in the mold through impressing or printing on a wall part of the mold or a carrier provided thereon.

35 30. A method according to any one of claims 21-29, wherein a holographic printing is provided.

31. A method according to any one of claims 21-30, wherein a bar-code or the like is provided.

32. A method according to any one of claims 21-31, wherein a carrier is provided in the mold, having a printing on two sides, the plastic being provided against the carrier and undetachably connected thereto.

33. A method according to claim 32, wherein the carrier is at least partially transparent.

34. A method according to any one of claims 19-33, wherein the protective means comprise magnetic and/or electronic means which are positioned on a carrier in the mold, whereupon plastic is squirted around the magnetic and/or electronic means, such that the carrier is enclosed or incorporated therein or disappears therein, for instance through burning or sublimation.

35. A method for manufacturing a storage device for products, in particular for plate-shaped data carriers, said storage device comprising a first and a second cover part, said storage device being injection molded from plastic, in particular polypropylene or the like, whereupon one or more products are included in the storage device and the storage device is closed around the products by moving the first and the second cover part against each other, whereupon at least one strip-shaped or band-shaped element is secured against the first and the second cover part, such that the cover parts are interconnected and products cannot be approached other than after breaking the protective means formed by the at least one strip-shaped or band-shaped element.

36. A method according to claim 35, wherein the first cover part is pivotally connected to the second cover part by pivot means, at least one strip-shaped or band-shaped element being provided at a distance from the pivot means.

37. A method according to claim 35 or 36, wherein the or each strip-shaped or band-shaped element is connected to the cover parts through heat treatment.

38. A method according to any one of claims 35-37, wherein the or each strip-shaped or band-shaped element is cut from a continuous strip of plastic directly prior to or during attachment against the storage device.

- 5 39. An apparatus for manufacturing a storage device according to any one of claims 1-18 or for using a method according to any one of claims 19-34, wherein the apparatus is arranged for injection molding, means being provided for fitting protective means in the mold, in particular a
10 printing.

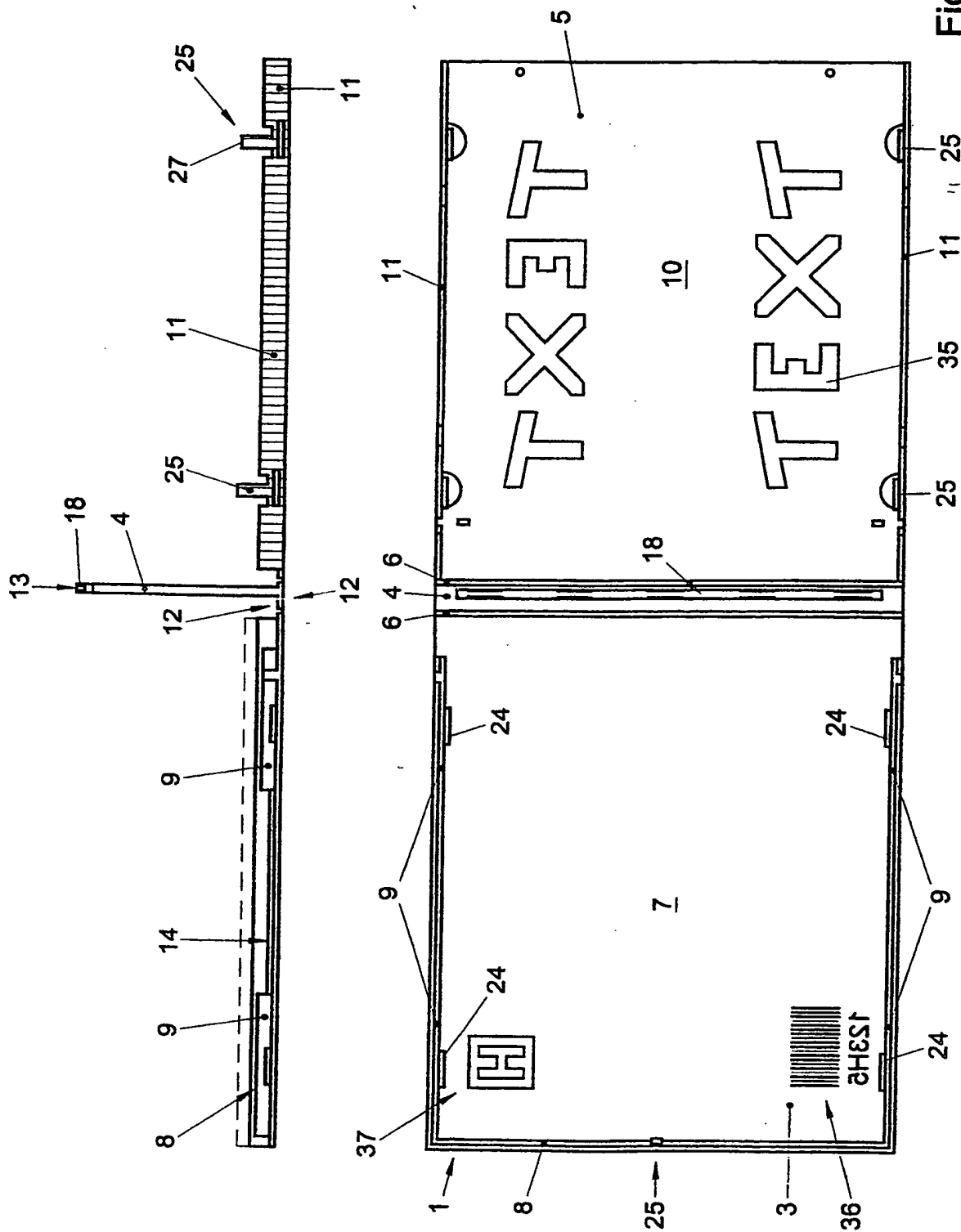


Fig. 1

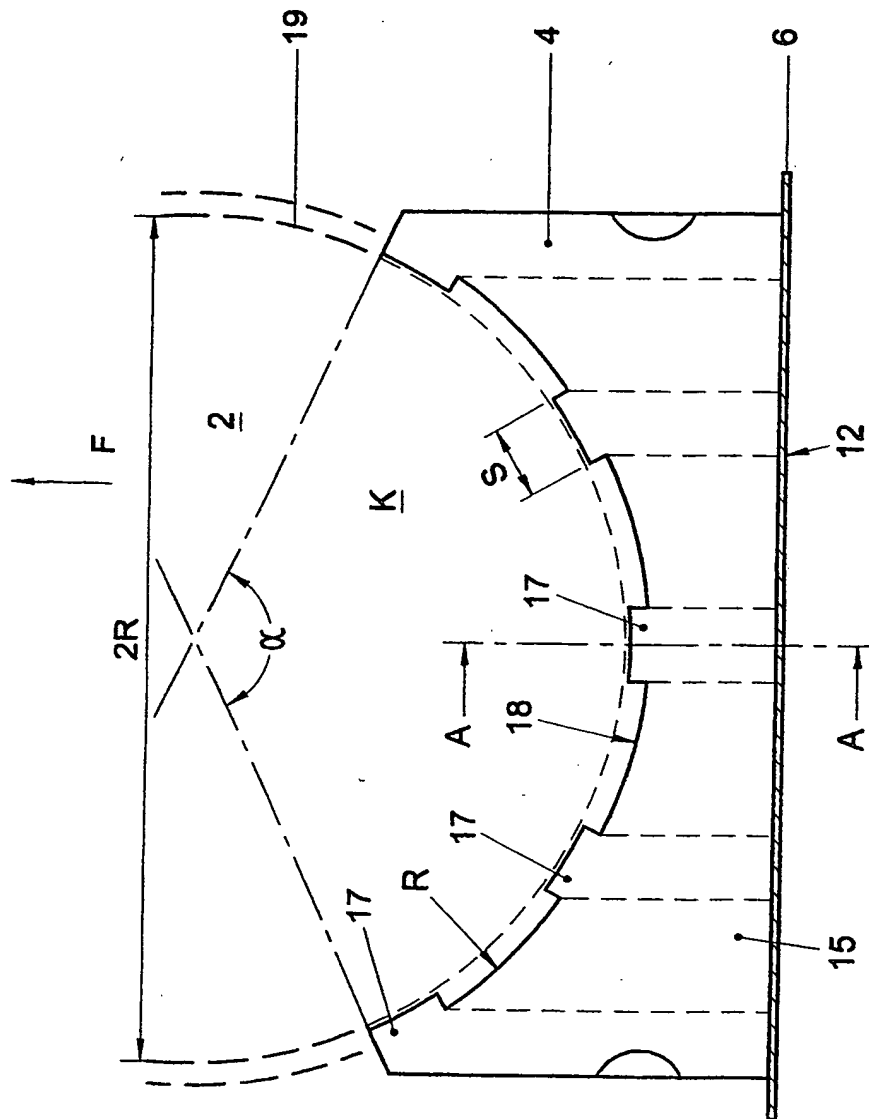


FIG. 2

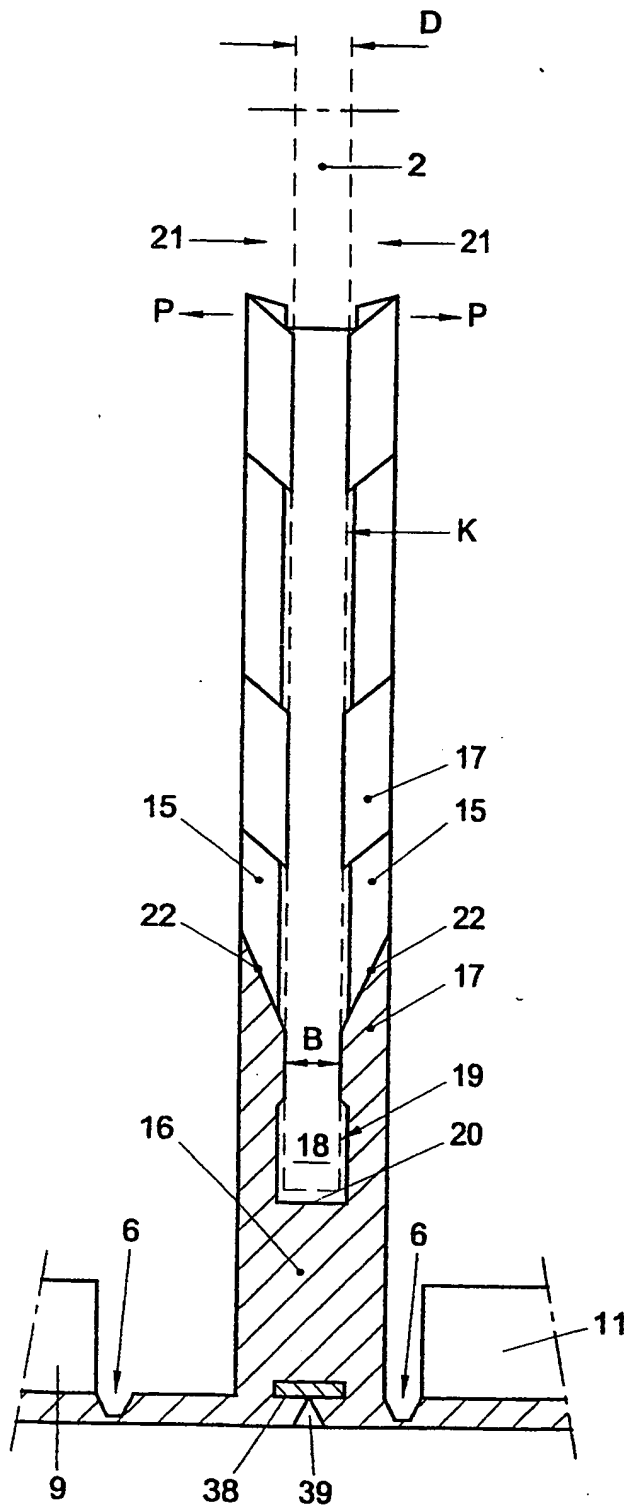


Fig. 2a

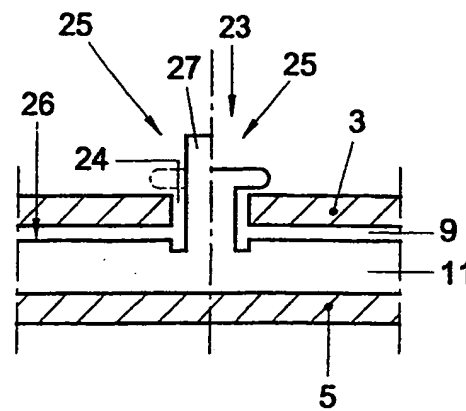


Fig. 7

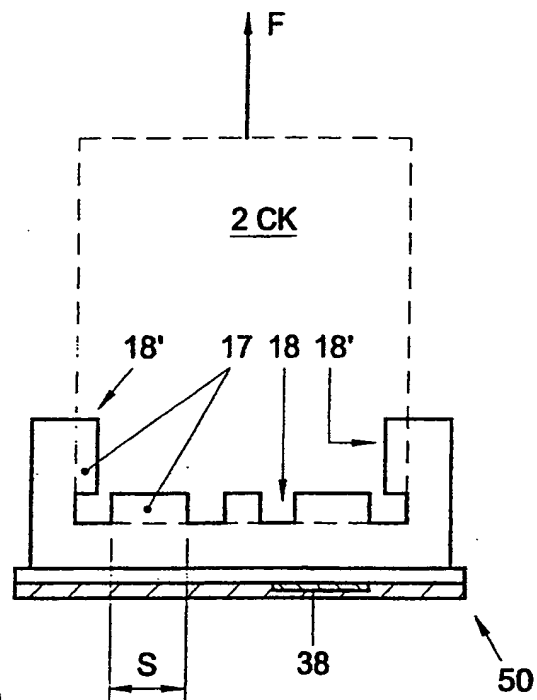


Fig. 3

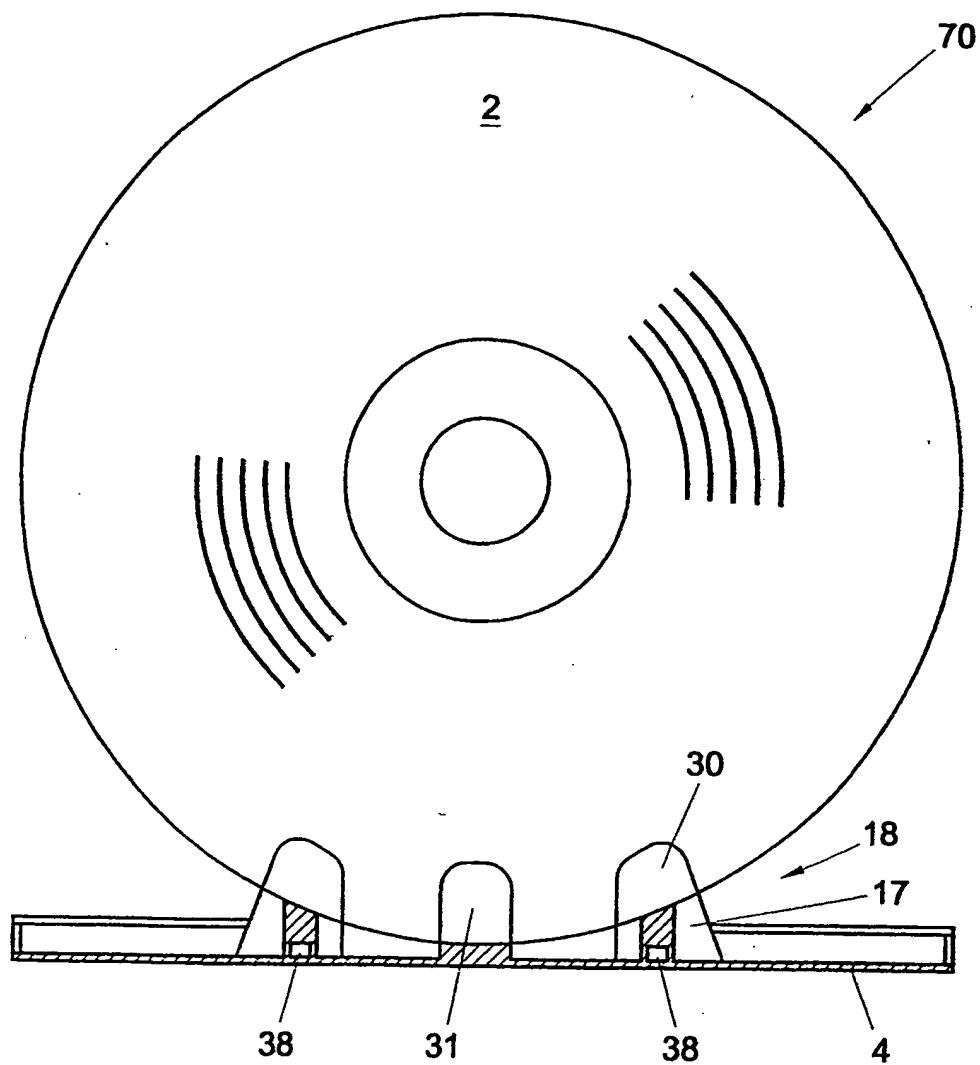


FIG. 4

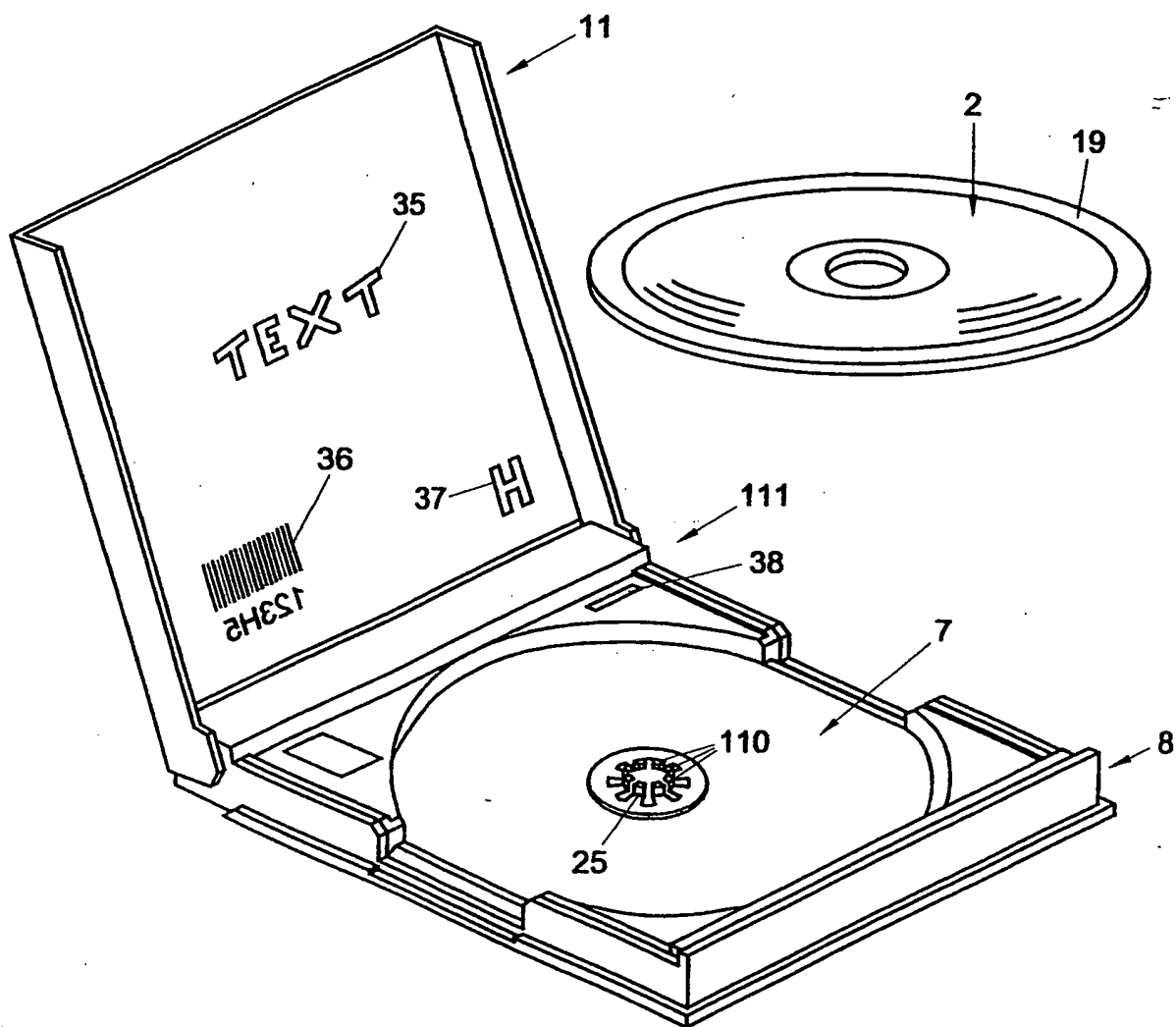


Fig. 5

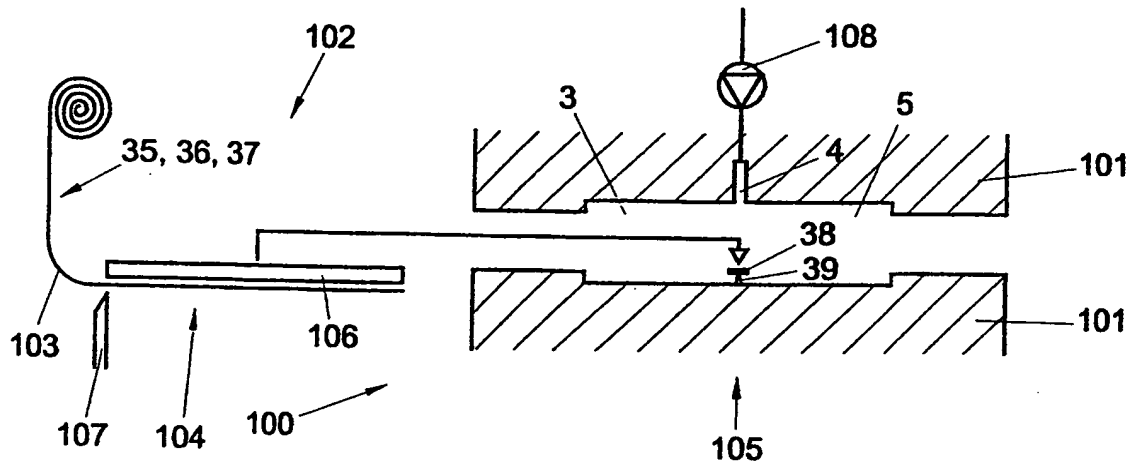


Fig. 6

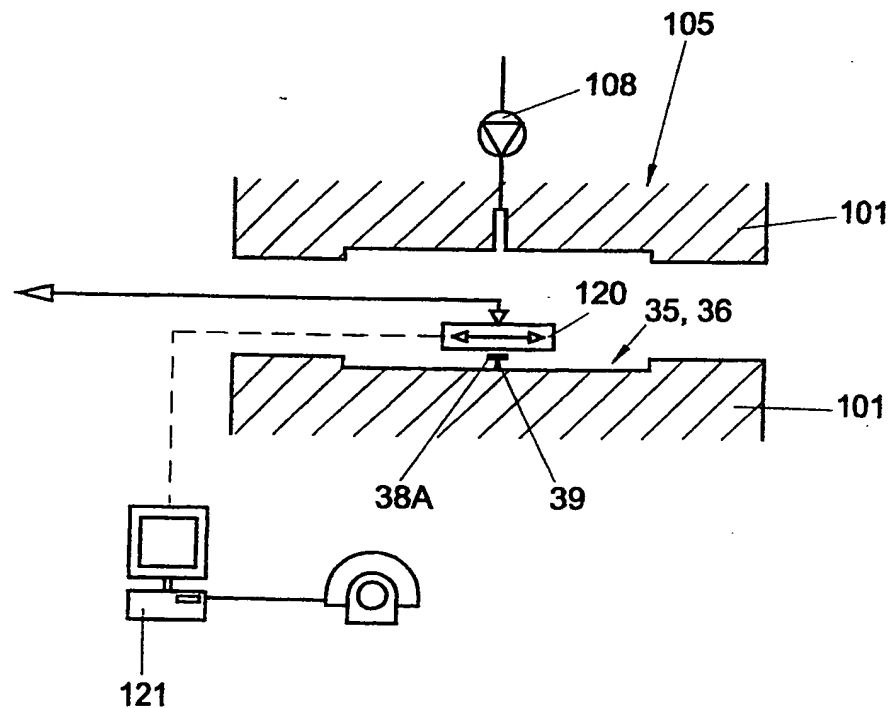


Fig. 6A.

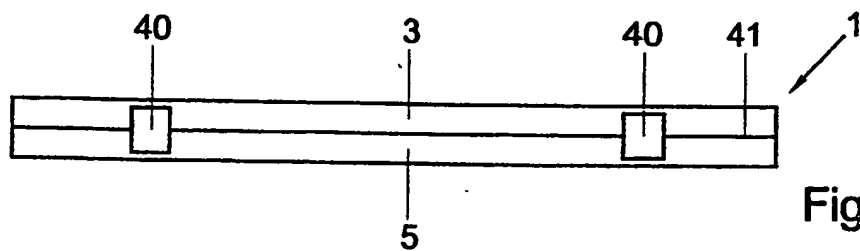


Fig. 8

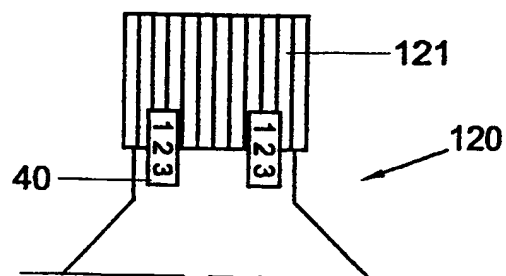


Fig. 9

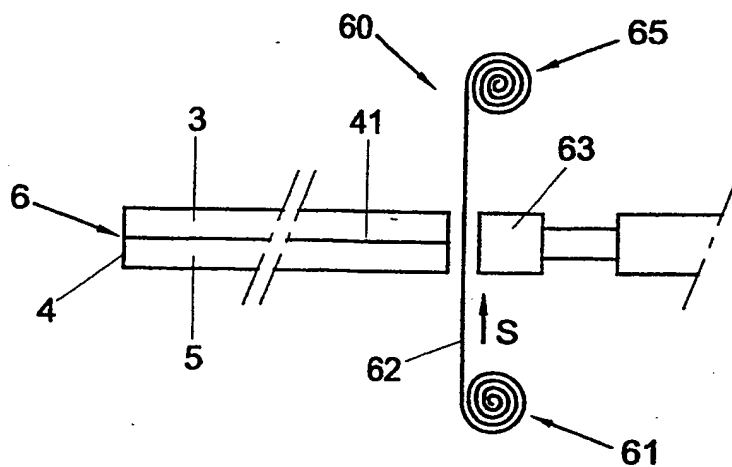


Fig. 10

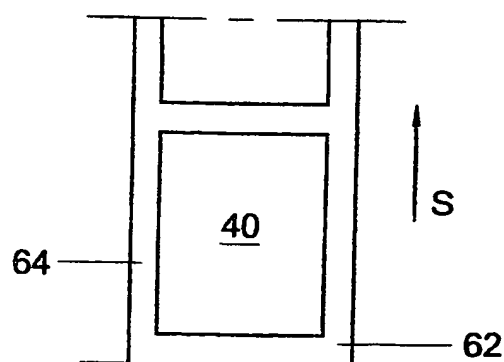


Fig. 11

INTERNATIONAL SEARCH REPORT

International Application No

PCT/NL 00/00105

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 G11B33/04

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 G11B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	US 5 081 446 A (PICCOLI ANTHONY F ET AL) 14 January 1992 (1992-01-14) column 6, line 50 - line 57	1, 4, 15 2, 3, 5-14, 16-32
X A	FR 2 605 747 A (CHECKPOINT SA ; BLEYS DOMINIQUE (FR)) 29 April 1988 (1988-04-29) page 5, line 31 - page 6, line 27; figures 1-7	1, 4, 15 2, 3, 5-14, 16-32
X	WO 96 21172 A (INSIGHT INC) 11 July 1996 (1996-07-11) page 11, line 13 - page 12, line 12; figures 1-5	1, 19, 31
	-/-	

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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"&" document member of the same patent family

Date of the actual completion of the international search

16 May 2000

Date of mailing of the international search report

23/05/2000

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INTERNATIONAL SEARCH REPORT

International Application No

PCT/NL 00/00105

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

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A	EP 0 762 357 A (LABEYRIE SA) 12 March 1997 (1997-03-12) column 3, line 51 -column 4, line 32; figure 2 -----	1

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